2020 Census Systems Readiness

Atri Kalluri
Decennial Information Technology Division

Patricia McGuire
Information Technology Directorate

2020 Census Systems Readiness
Agenda

2017 Census Test Key IT Objectives Achieved

2017 Census Test Lessons Learned

Moving from 2017 to 2018

2018 End-to-End Census Test Readiness

CEDCaP Systems for 2018 End-to-End Census Test

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

2020 Census Systems Readiness

2017 Census Test – Objectives Achieved

Deployment in the Cloud

Pega 7 platform based solutions

Data flow between Cloud and Census Data Center

Census Questionnaire Assistance

Production Environment for Administrative Records Staging Integration and Storage (PEARSIS)

Response Processing

2020 Census Systems Readiness

2017 Census Test – Lessons Learned

Development and Test	Infrastructure	Data Integration	Other
• Thread testing alone may not be enough to assure quality products	• Cloud has its own limitations • Automate deployments	• More focus needed on data architecture and data integration	• Be ready to react to the unexpected

United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

United States Census 2020

2020 Census Systems Readiness
Moving from 2017 to 2018

**Role of the Technical Integrator:**

- Requirements Management
- Business Architecture
- Detailed Solution Design
- Physical Architecture Planning and Design
- Mobile Integration
- Engineering and Integration
- Data Center Capability Implementation
- Verification and Validation
- Release and Deployment Management
- Disaster Recovery Design
- IT Security

Added Advantage of:

- DevOps (Cloud based)
- Improvements based on independent assessment of systems
- Added resources for integration, scalability and performance testing
- External and Internal Demand Models
- Simulated Data
- Comprehensive infrastructure architecture combined with security
- Decennial focused data center

United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

United States Census 2020

2020 Census Systems Readiness
2018 End-To-End Census Test Solution Architecture

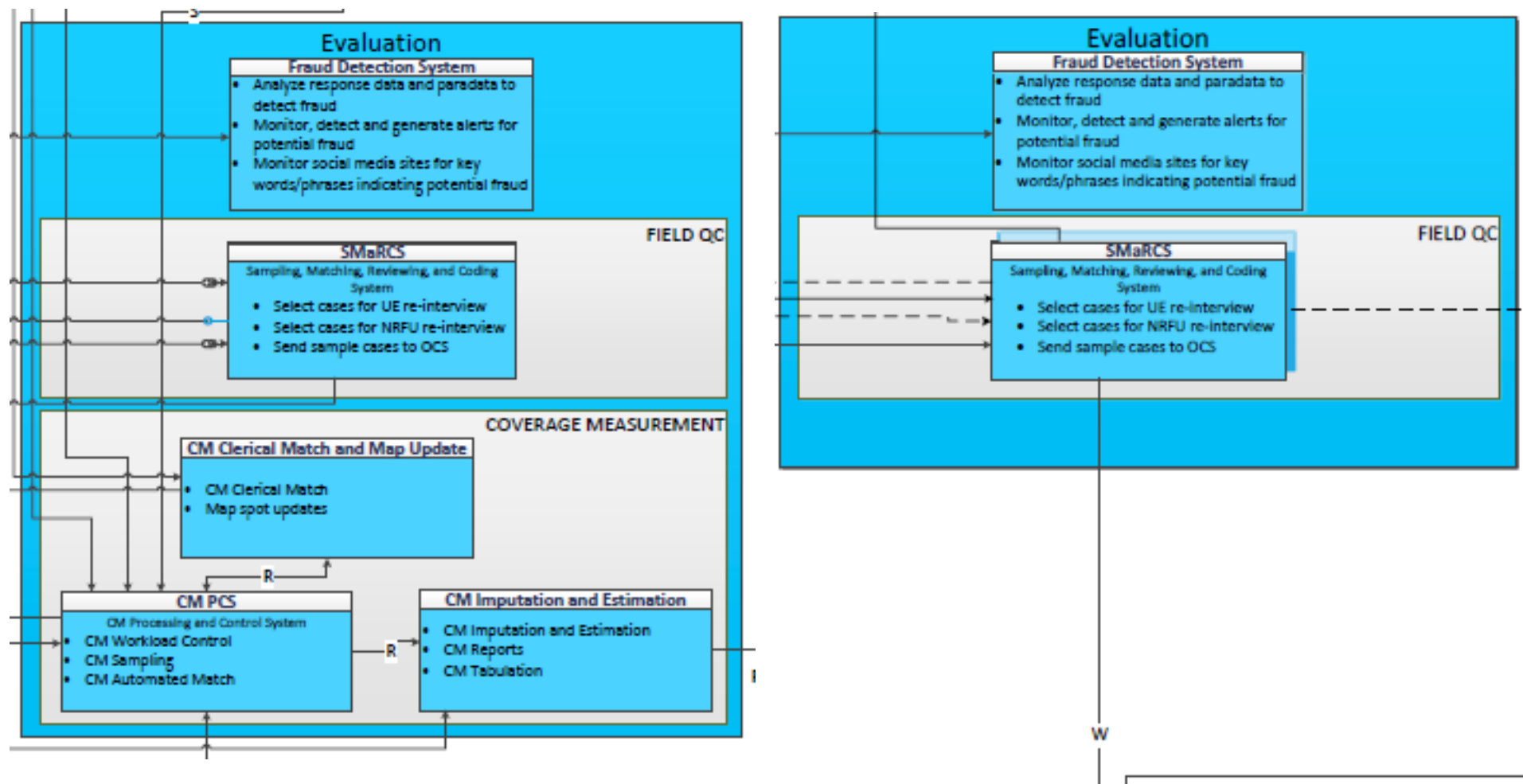2018 End-to-End Census Test Solution Architecture
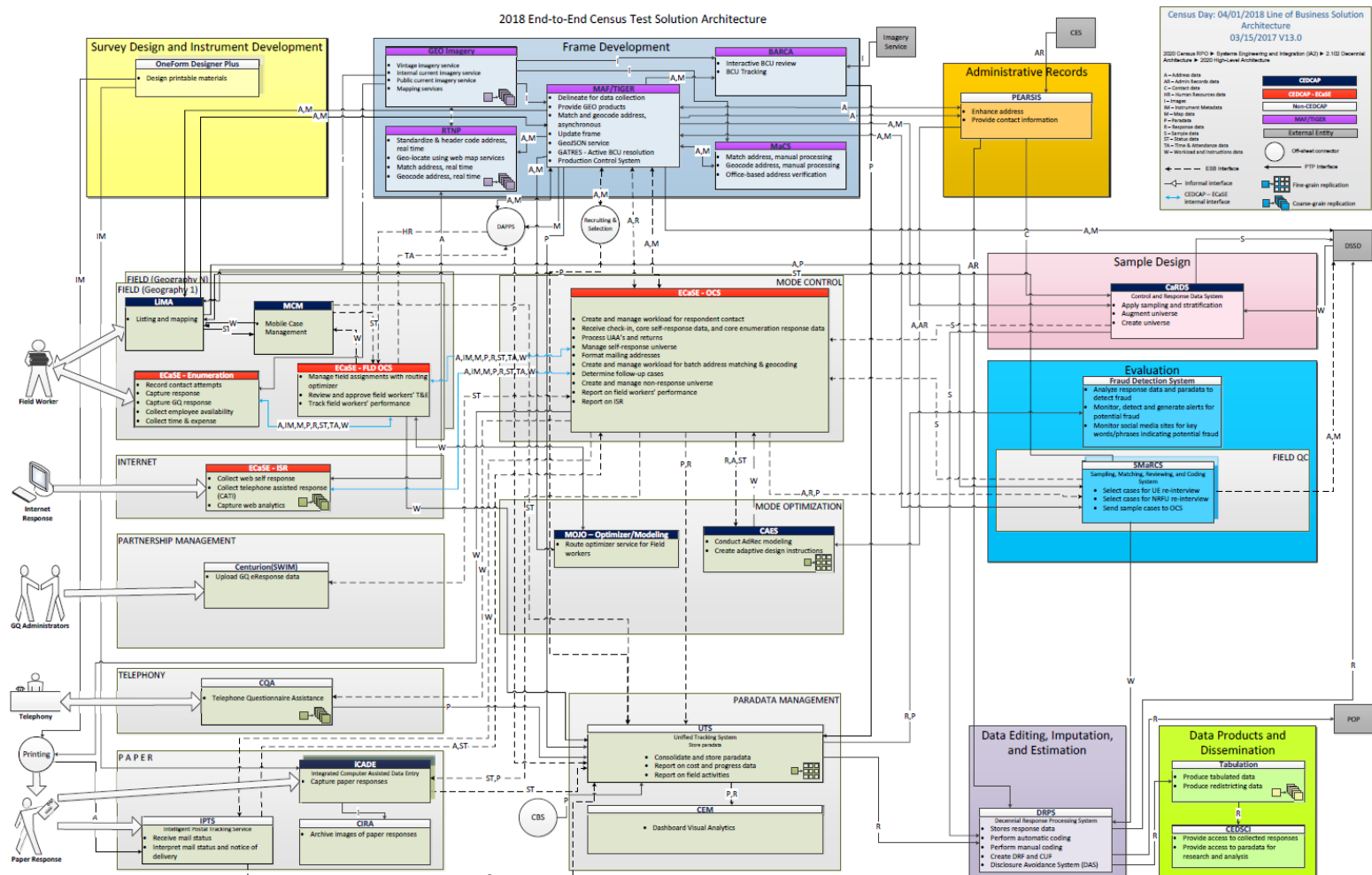
2020 Census Systems Readiness
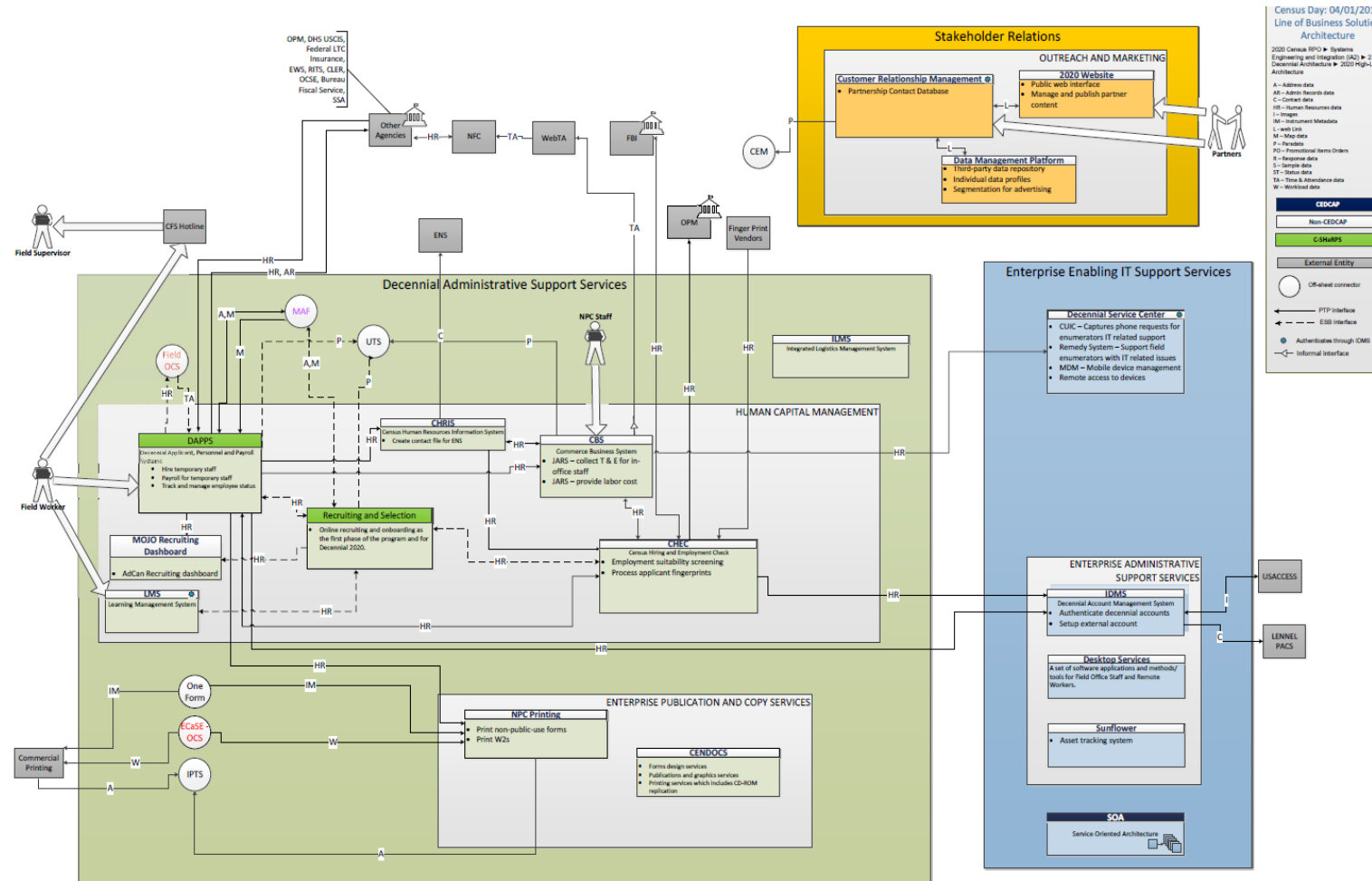## 2018 End-To-End Census Test Solution Architecture Changes
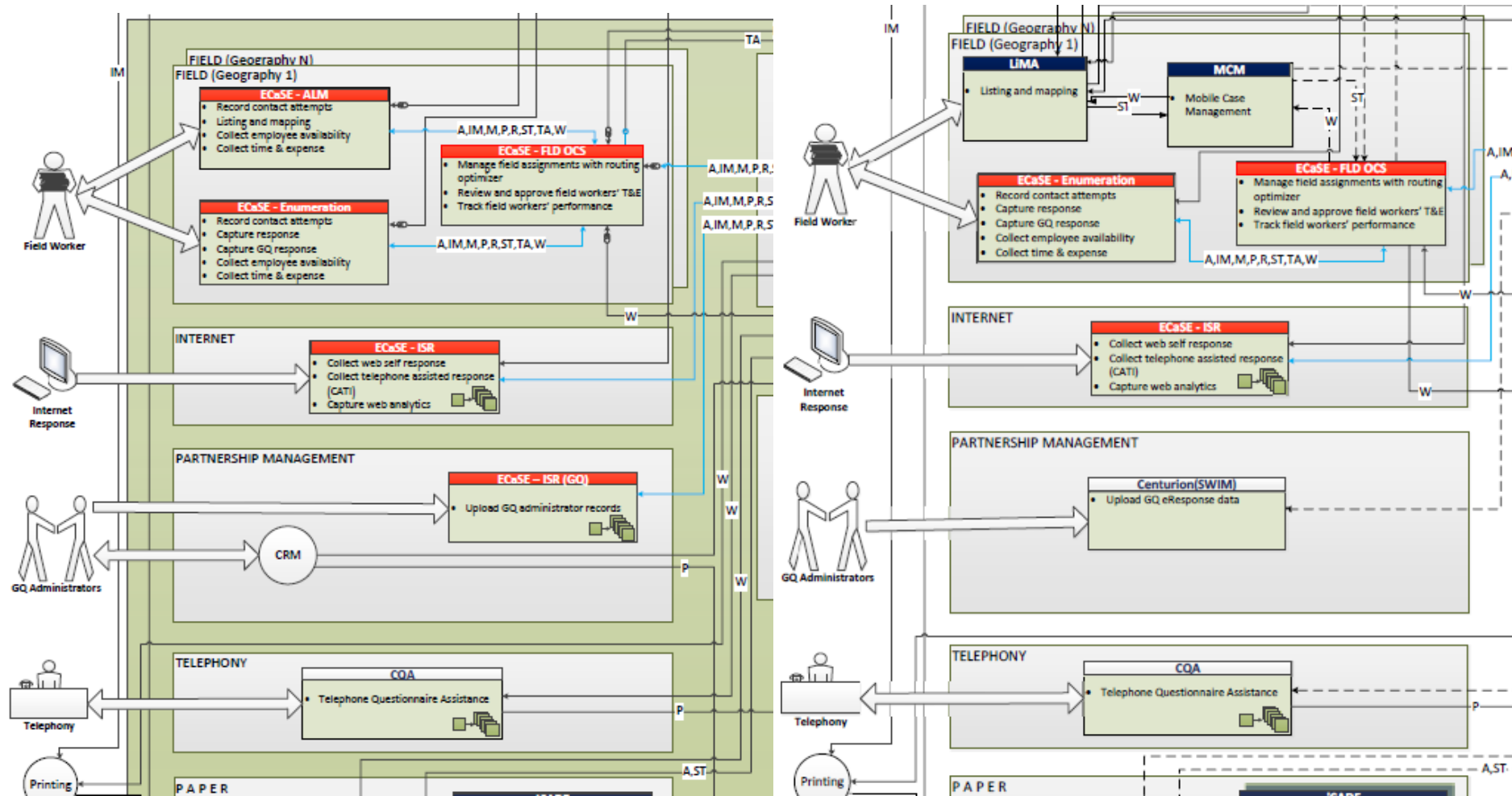
2020 Census Systems Readiness
2018 End-To-End Census Test Solution Architecture Changes (continued)

2018 End-To-End Census Test Solution Architecture (continued)

2020 Census Systems Readiness
2018 End-to-End Census Test Systems

System	Key Efforts/Updates required for 2018/2020
CEDSCI (Center for Enterprise Dissemination Services and Consumer Innovation)	Establish interfaces with 2018 End-to-End Census Test systems. Continue development and test of functionality.
CEM (Customer Experience Management)	Develop enhancements and deploy in support of the 2018 End-to-End Census Test IPC operation. Possible scalability updates are required to support 2020 Census.
CQA (Census Questionnaire Assistance)	Establish interfaces with 2018 End-to-End Census Test systems. Develop and deploy in support of the 2018 End-to-End Census Test Self-Response operation. Scalability updates are required to support 2020 Census.
C-SHaRPS (Census Schedule A Hiring, Recruiting and Payroll System)	Develop and deploy for 2018 End-to-End Census Test. C-SHaRPS contract awarded October 2016.
DAPPS (Decennial Applicant, Personnel and Payroll Systems)	Develop and deploy interface with C-SHaRPS for 2018 End-to-End Census Test. Enumeration Recruiting Release and Benefits implementation is complete. DAPPS is supporting the 2018 End-to-End Census Test Recruiting.
DRPS (Decennial Response Processing System)	Develop enhancements and deploy in support of response processing operation. Scalability updates are required to support 2020 Census.

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

2020 Census Systems Readiness
2018 End-to-End Census Test Systems (continued)

System	Key Efforts/Updates required for 2018/2020
IPTS (Intelligent Postal Tracking System)	Technical Integrator completed IPTS assessment and provided recommendations for 2018/2020 postal-tracking solution. Implement the solution to support 2018 End-to-End Census Test.
LMS (Learning Management System)	Leveraged existing C-SHaRPS BPA and acquired SaaS vendor solution in March 2017.
MAF/TIGER (Master Address File/Topologically Integrated Geographic Encoding and Referencing Database)	Develop and deploy collection geographies. Provide address and geospatial services for all operations. Initial geography for the 2018 End-to-End Census Test is deployed.
MOJO (Recruiting Dashboard)	As-Is system. Deployed for 2018 End-to-End Census Test recruiting effort.
PEARSIS (Production Environment for Administrative Records Staging, Integration and Storage)	Continue development, test and deploy in support of 2018 End-to-End Census Test.
RTNP (Real Time Non-ID Processing)	Verify cloud deployment in the production environment in support of the self-response operation. Scalability updates are required to support 2020 Census.

United States™ Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

United States™ Census 2020

2020 Census Systems Readiness
2018 End-to-End Census Test Systems (continued)

| System	Key Efforts/Updates required for 2018/2020
SMaRCS (Sampling, Matching, Reviewing, and Coding System)	Develop enhancements and deploy in support of the 2018 End-to-End Census Test.
Tabulation (Decennial Tabulation System)	Establish interface with 2018 End-to-End Census Test systems, develop and deploy enhancements required to support the 2018 End-to-End Census Test. Completed initial test using 2010 data/volumes.
UTS (Unified Tracking System)	Develop scalability enhancements and deploy in support of 2018 End-to-End Census Test. Approved data lake architecture.
Fraud Detection System	Develop, test, and deploy in support of the 2018 End-to-End Census Test.

United States™ Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

United States™ Census 2020

2020 Census Systems Readiness
2018 End-To-End Census Test Support Systems

System	Key Efforts/Updates required for 2018/2020
CBS (Commercial Business System)	As-Is system, no functionality updates are required for its 2018/2020 baseline scope. Some updates may be required when interfacing systems (such as DAPPS) migrate to the cloud.
CENDOCS (Census Document System)	As-Is system, no functionality updates are required for its 2018/2020 baseline scope.
CHEC (Census Hiring and Employment Check System)	Third party vendor interface needs to be implemented once the fingerprinting contract is awarded. Scalability updates are required to support 2020 Census.
CHRIS (Census Human Resources Information System)	As-Is system, no functionality updates are required for 2018/2020 baseline scope. Some updates may be required when interfacing systems (such as DAPPS) migrate to the cloud.
CIRA (Census Image Retrieval Application)	As-Is system, no functionality updates are required for its 2018/2020 baseline scope. Scalability updates are required to support 2020 Census.
Commercial Printing	Award to a GSA vendor. Develop interface with 2018 End-to-End Census Test systems.
IDMS (Identity Management System)	As-Is system, no functionality updates are required for its 2018/2020 baseline scope. Scalability updates are required to support 2020 Census. Integrate with TI environment.
ILMS (Integrated Logistics Management System)	Finalize baseline scope. Develop interface with 2018 End-to-End Census Test systems in support of IPC. Possible scalability updates are required to support 2020.
NPC Printing (Printing at the National Processing Center)	As-Is system, no functionality updates are required for its 2018/2020 baseline scope.
Sunflower	As-Is system, no functionality updates are required for its 2018/2020 baseline scope.

United States™ Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

109

United States™ Census 2020

2020 Census Systems Readiness
Census Enterprise Data Collection and Processing (CEDCaP) Capabilities and Solutions

CEDCaP is comprised of delivery of enterprise capabilities and the solutions to provide those capabilities.
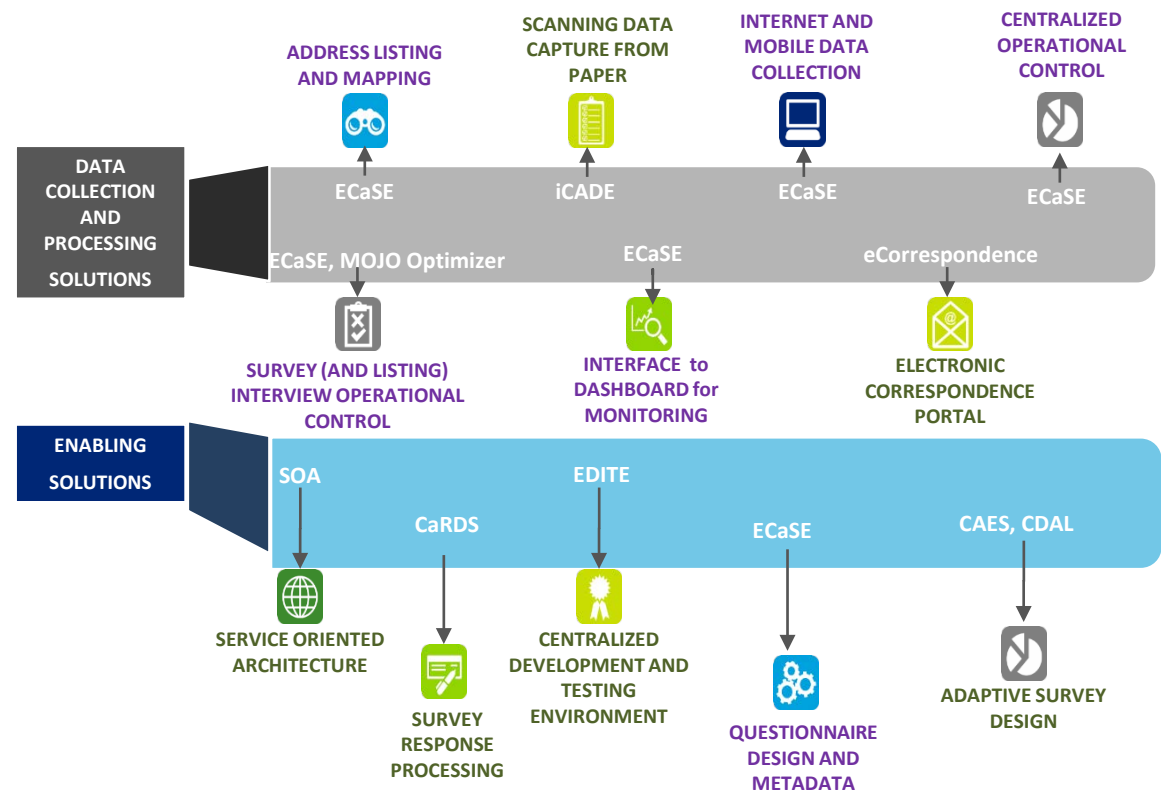
Capabilities shown in purple will be provided by the Enterprise Censuses and Surveys Enabling (ECaSE) Platform

Census Enterprise Data Collection & Processing (CEDCaP)

CEDCaP Data Collection & Processing Capabilities and Solutions Delivered:	
CEDCaP Capability	**CEDCaP Solution**
1) Centralized Development and Testing Environment to CEDCaP projects	Enterprise Development, Integration, & Test Environment (EDITE)
2) Service Oriented Architecture for CEDCaP projects (i.e., common infrastructure and efficient system interfaces to allow IT applications to communicate without the need for costly system re-writes)	Application Programming Interface (API) Infrastructure (API-I)
3) Centralized Operational Analysis and Control and Adaptive Survey Design capability, including statistical modeling and administrative records	ECaSE Operational Control System Census–Data Access Layer (C-DAL) Concurrent Analysis and Estimation System (CAES)
4) Survey (and Listing) Interview Operational Control	ECaSE Operational Control System MOJO Optimizer
5) Address Listing and Mapping	ECaSE Address Listing Mapping
6) Interface to the Dashboard for Monitoring Survey Cost, Progress, and Quality and Enterprise Paradata Repository	ECaSE
7) Questionnaire Design and Metadata	ECaSE- Questionnaire Design Metadata
8) Internet and Mobile Data Collection	ECaSE Internet Self Response ECaSE – Enumeration
9) Electronic Correspondence Portal	eCorrespondence
10) Scanning Data Capture from Paper	Integrated Computer Assisted Data Entry (iCADE)
11) Survey Response Processing	CARDS (Pre-data collection, TBD (Post-data collection processing)

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

2020 Census Systems Readiness
CEDCaP Systems

CEDCaP System	Key Efforts/Updates required for 2018/2020
CaRDS (Control and Response Data System)	Develop enhancements to functionality that supported the 2015 and 2016 Census Tests. In production for the 2017 Census Test. Developing enhancements to support the 2018 End-to-End Census Test. Scalability updates are required to support 2020.
iCADE (Integrated Computer Assisted Data Entry System)	Develop enhancements to legacy system that supported the 2015 and 2016 Census Tests. In production for paper data capture for the 2017 Census Test. Developing enhancements needed for the 2018 End-to-End Census Test. Scalability updates are required to support 2020.
SOA (Service Oriented Architecture)	Used to support the 2016 Census Test. In production for the 2017 Census Test to support interfaces between ECaSE in the Cloud and those systems not in the Cloud. Will be used in the Technical Integrator environments for the 2018 End to End Census Test.
ECaSE (Enterprise Censuses and Surveys Enabling)	Internet Self-Response and Survey Operational Control functionality in productions for the 2017 Census Test. Developing enhancements for the 2018 End-to-End Census Test. Scalability updates are required to support 2020. Planning underway to address recommendation from May 2016 COTS Capability Assessment and Analysis decision – conduct performance testing comparison between PRIMUS (CEDCaP solution from the 2016 Census Test and ECaSE-ISR). Testing will be done by Technical Integrator using 2020 workload models and solutions developed to 2018 End-to-End Test requirements.

United States™ Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

111

United States™ Census 2020

2020 Census Systems Readiness
CEDCaP Systems

CEDCaP System	Key Efforts/Updates required for 2018/2020
CAES (Concurrent Analysis and Estimation) (2018 End to End Test)	First time use in the 2018 End-to-End Census Test. Finalize 2020 Census models that will run on CAES and obtain an ATO in order to support the 2018 End-to-End Census Test.
MOJO (Route Optimizer)	Supported Census Tests in 2015 and 2016 Census. Developing enhancements needed for the 2018 End-to-End Census Test to apply business rules needed to re-engineer field operations. Scalability updates are required to support 2020.

United States Census Bureau™

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

United States™ Census 2020

Questions?

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov